

I CLAIM:

1. A method for induction hardening a workpiece comprising the steps of:

fastening a workpiece in a clamping assembly wherein the clamping assembly is provided with a plurality of hardness testing devices;

moving an induction hardening head over the workpiece to harden an edge;

taking a hardness measurement with the plurality of hardness testing devices;

and

adjusting a voltage input to the induction hardening head to provide a predetermined hardness profile to the workpiece.
2. The method of claim 1, further comprising the step of relaying a hardness signal to a controller.
3. The method of claim 1, further comprising the step of taking a hardness measurement of the workpiece following the induction hardening head to ensure a predetermined hardness level has been achieved.
4. The method of claim 3, further comprising the step of relaying the measurement of the workpiece following the induction hardening head to a controller.
5. The method of claim 4, further comprising the step of generating a hardness profile for the workpiece.
6. A method for induction hardening a workpiece comprising the steps of:

fastening a workpiece in a clamping assembly;

providing a first hardness testing device to a forward side of an induction hardening head;

moving the induction hardening head over the workpiece to induction harden the workpiece;

taking a plurality of forward hardness measurements of the workpiece with the first hardness testing device; and

adjusting the induction hardening head to provide a predetermined hardness profile to the workpiece.

7. The method of claim 6, further comprising the step of providing a second hardness testing device to a following side of the induction hardening head.

8. The method of claim 7, further comprising the step of relaying the plurality of forward hardness measurements to a controller.

9. The method of claim 7, further comprising the step of taking a plurality of following hardness measurements of the workpiece with the second hardness testing device.

10. The method of claim 9, further comprising the step of relaying the plurality of following hardness measurements to a controller.

11. A method for ensuring a consistent hardening profile for an induction hardened workpiece, the method comprising the steps of:

providing a first hardness testing device to a forward side of an induction hardening head;

moving the induction hardening head over the workpiece to induction harden the workpiece;

taking a plurality of forward hardness measurements of the workpiece with the first hardness testing device;

providing the plurality of forward hardness measurements to a controller; and

adjusting the induction hardening head to provide a predetermined hardness profile to the workpiece.

12. The method of claim 11, further comprising the steps of:

providing a second hardness testing device to a following side of the induction hardening head;

taking a plurality of following hardness measurements of the workpiece with the second hardness testing device;

providing the plurality of following hardness measurements to the controller;

and

generating a fault signal for each of the plurality of following hardness measurements falling outside of a predetermined range.

13. An apparatus for induction hardening an elongated workpiece, the apparatus comprising:

a clamping assembly mounted to a base;

an induction hardening assembly slidably connected to the base for induction hardening an edge of the workpiece; and

a plurality of hardness measuring devices disposed along the workpiece.

14. The induction hardening apparatus of claim 13, wherein the plurality of hardness measuring devices are manual-type devices.

15. The induction hardening apparatus of claim 13, wherein the plurality of hardness measuring devices are automated-type devices.

16. The induction hardening apparatus of claim 15, wherein the plurality of hardness measuring devices are in electrical communication with a controller.

17. An apparatus for induction hardening an elongated workpiece, the apparatus comprising:

- an induction hardening assembly slidably connected to a base for induction hardening an edge of the workpiece;

- a first hardness measuring device disposed on a forward side of the induction hardening assembly; and

- a second hardness measuring device disposed on a following side of the induction hardening assembly.

18. The induction hardening apparatus of claim 17, wherein the first hardness measuring device and the second hardness measuring device are both manual-type devices.

19. The induction hardening apparatus of claim 17, wherein the first hardness measuring device and the second hardness measuring device are automated-type devices.

20. The apparatus of claim 19, wherein each of the first hardness measuring device, the second hardness measuring device and the induction hardening assembly are in electrical contact with a controller.

21. A method for induction hardening a workpiece comprising the steps of:

step for fastening a workpiece in a clamping assembly;

step for providing a first hardness testing device to a forward side of an induction hardening head;

step for moving the induction hardening head over the workpiece to induction harden the workpiece;

step for taking a plurality of forward hardness measurements of the workpiece with the first hardness testing device; and

step for adjusting the induction hardening head to provide a predetermined hardness profile to the workpiece.

22. An apparatus for induction hardening an elongated workpiece, the apparatus comprising:

means for induction hardening assembly edge of the workpiece;

first means provided to the apparatus for measuring the hardness of the workpiece; and

second means provided to the apparatus for measuring the hardness of the workpiece.